

PACE Evaluation Summary

August 2005

*The PACE evaluation was conducted and summarized
by the Division of Health Care Finance and Policy
on behalf of the Executive Office of Elder Affairs.*

The Program of All-inclusive Care for the Elderly (PACE) is a program that features a comprehensive service delivery system, and integrated Medicare and Medicaid financing for frail elders who meet clinical criteria to be admitted to a nursing home but who choose to remain in the community. An array of coordinated services are provided in order to maintain the PACE members in the community and out of nursing homes. Each PACE program receives a set amount of money per person regardless of the services the frail elderly members utilize. This creates an incentive for the programs to manage their funding carefully.

An interdisciplinary team, consisting of professional and paraprofessional staff, assesses participants' needs, develops care plans, and delivers all services (including acute care services, and when necessary, nursing facility services) which are integrated for a seamless provision of total care. PACE programs provide social and medical services primarily in an adult day health center supplemented by in-home and referral services in accordance with the participant's needs. The PACE service package must include all Medicare and Medicaid covered services, and other services determined necessary by the interdisciplinary team for the care of the PACE participant.

Analysis

In order to evaluate the effectiveness of the PACE program in keeping its enrollees well and out of a hospital, the Massachusetts Division of Health Care Finance and Policy (DHCFP) calculated age-adjusted rates per 100 enrollees for acute inpatient discharges and days of care in FY04 for PACE enrollees and for two comparison groups. One comparison group was a group of elderly who, like PACE program participants, were nursing home eligible, but receiving care in a home or community rather than institutional setting. The other comparison group was a sample of nursing home residents. Hospitalizations were classified as *preventable* (i.e., an ambulatory-care sensitive condition for which inpatient care might have been reduced by timely and effective outpatient care) or *other* (non-preventable). These analyses reflect finalized FY04 Hospital Discharge Data. A summary of results follows.

Summary

We found that PACE enrollees and nursing home residents had similar inpatient discharge rates (also referred to in this summary as hospitalization rates) whereas the waiver group had significantly higher rates for both preventable and non-preventable conditions. In contrast, the PACE group had significantly lower rates of days of care, the waiver group had the highest rates, and the nursing home group fell between these two groups. The most frequent preventable conditions varied among the three evaluation groups. For instance, we found bacterial pneumonia to be more common among nursing home residents than among PACE or waiver enrollees, while congestive heart failure (CHF) was more common among these latter two groups (see Tables 1-5).

To further illuminate the results presented in Table 4 (inpatient days per 100 enrollees), we have added an additional table (Table 4a) which shows average length of stay (LOS), i.e., total inpatient days divided by total inpatient discharges, by evaluation group and condition type. Inpatient days per 100 enrollees are an interplay of two factors: the number of hospitalizations and the number of days of inpatient care per hospitalization. Table 4a is meant to highlight this second factor more clearly. While average LOS is similar across the three groups for preventable conditions, nursing home residents have higher lengths of stay for non-preventable and all (preventable plus non-preventable) conditions.

As some have noted, nursing home hospitalization rates appear to have fallen since the original 1998 PACE analysis. Some have hypothesized that this trend may be the result of the Evercare model, which is an enhanced model of coordinated care used in some nursing homes. Unfortunately, data are not currently available to test this hypothesis.

While hospitalization rates for the PACE and nursing home groups are similar, PACE enrollees show lower overall rates of inpatient days than the other two groups. While this difference could be due to clinical factors (e.g., PACE cases may be less severe), those familiar with the three programs may wish to consider other plausible reasons for the lower rates experienced by the

PACE group. For instance, are there differences in the ways the programs pay for inpatient care that provide hospitals with incentives to discharge PACE patients after fewer days?

Other (Non-preventable) Conditions

At the request of the PACE medical directors, we further investigated non-preventable discharges. Table 6 presents discharge and inpatient day rates for the ten most common non-preventable diagnoses for each of the three groups. As with the preventable conditions, we see variation among the groups. Pneumonitis due to solids and liquids (aspiration pneumonia) was the most common non-preventable condition among the nursing home group, followed by septicemia and fracture of the neck of femur (hip fracture). For the waiver group, “symptoms involving the respiratory system and other chest symptoms” was the most common non-preventable diagnosis, followed by other forms of chronic ischemic heart disease, and acute myocardial infarction (heart attack).

Acute myocardial infarction was the most common diagnosis among non-preventable hospitalizations for the PACE group, followed by general symptoms (includes, for example, fainting), and care involving use of rehabilitation procedures. Altogether there were 15 PACE diagnoses for this last group, all falling within the sub-diagnosis V57.89 or “other specified rehabilitation procedures.” Clinicians at the PACE programs may wish to consider whether there are additional rehabilitation services that could be offered at PACE adult day health centers that would serve to reduce hospitalizations.

Table 7 shows the distribution and inpatient rates per 100 enrollees for 25 common non-preventable conditions experienced by the three groups. It should be noted that no one primary diagnosis makes up more than 10 percent of total non-preventable discharges for any of the three evaluation groups. Table 8 shows inpatient days per 100 enrollees for these 25 conditions and Table 9 shows a comparison of average LOS (total days divided by discharges). Tables 7-9 are meant to provide an easy side-by-side comparison of rates for the three evaluation groups.

These tables show, for example, that acute myocardial infarction ranks among the top ten conditions for each of the three groups, but is more common in the PACE and waiver groups than in the nursing home group (2.78 discharges per 100 PACE enrollees, 2.18 discharges per 100 waiver enrollees, and 0.90 discharges per 100 nursing home residents). Inpatient days per 100 enrollees associated with acute myocardial infarction are also higher for the PACE and waiver groups than for the nursing home group (15.14 inpatient days per 100 PACE enrollees, 12.37 inpatient days per 100 waiver enrollees, and 5.08 days per 100 nursing home enrollees). Average lengths of stay associated with acute myocardial infarction, however, are similar among the three groups (5.44 days for PACE enrollees, 5.67 for waiver enrollees and 5.64 for nursing home residents). Thus the higher inpatient day rates for PACE and waiver enrollees associated with acute myocardial infarction are due to higher hospitalization rates, not longer stays in the hospital per case.

Alternatively, certain mental disorders (affective psychoses, schizophrenic disorders, and senile and pre-senile organic psychotic conditions) are more common among the nursing home group than the PACE and waiver groups. In fact, if all hospitalizations listing a mental disorder as the primary diagnosis are removed from the analysis, the nursing home group shows lower inpatient discharges and inpatient days per 100 enrollees for both non-preventable conditions and total conditions (preventable plus non-preventable) than either PACE or waiver groups. This may be a matter of self-selection if individuals with mental health issues are more likely to reside in nursing homes than to participate in community-based programs for nursing home certifiable individuals such as PACE or the waiver program. Another possibility is that the community-based programs are better at treating mental disorders within the programs themselves, so as to avoid hospitalizations. A chart review of PACE enrollees may provide insight on the prevalence of mental disorders and treatment that is occurring within the program.

Note that due to the relatively small number of discharges associated with any one non-preventable condition, rates presented in Tables 6-9 are not age-adjusted.

Comorbidities

We were also asked to investigate how comorbidities varied among the three evaluation groups. We approached this issue from several different directions. First, we examined whether the number of comorbidities suffered varied among the three groups. Within the Hospital Discharge Data there are fifteen diagnosis fields associated with each discharge (i.e., a primary diagnosis field and fourteen secondary diagnosis fields). Using these data elements, we calculated the average number of diagnoses per discharge for each of the three groups, by condition type. These results are presented in Table 10, while Table 11 gives average number of diagnoses per discharge for each preventable condition. Overall, PACE and waiver enrollees have slightly fewer diagnoses per discharge than nursing home residents. Though small, t-tests show that differences between the nursing home group and the other two groups presented in Table 10 are statistically significant. However, the data do not enable us to determine why nursing home patients who have been discharged from a hospital have more comorbidities than hospitalized PACE and waiver patients. Nursing home residents may be sicker to begin with (as a result of selection issues) or become sicker as a result of residing in a nursing home.

One might inquire whether the longer average lengths of stay observed for nursing home patients (Table 4a) are due to these individuals suffering more comorbidities. However, the difference in LOS between the hospitalized nursing home and community-based patients is larger than what is suggested by the (smaller) difference in number of comorbidities between the two groups. This may be due to the fact that the difference in average number of comorbidities between the nursing home and community-based groups, though statistically significant, is rather small.

We also examined the different types of comorbidities suffered by individuals in the evaluation. Tables 12a through 12e show the most frequently observed comorbidities (i.e., secondary diagnoses) associated with the five most common preventable conditions: bacterial pneumonia, congestive heart failure, kidney and urinary infections, chronic obstructive pulmonary disease (COPD), and dehydration. Table 12a shows, for instance, that essential hypertension was listed as a comorbidity for almost 54 percent of bacterial pneumonia discharges for the PACE group, and 49 and 41 percent respectively for the waiver and nursing home groups. One observation

from this analysis was that certain conditions such as hypertension, diabetes, and chronic ischemic heart disease appeared frequently as comorbidities across all evaluation groups and preventable conditions. This was not surprising as these are chronic conditions commonly suffered by many elderly individuals.

To investigate this further, we next used a more systematic approach to examine the issue of common chronic conditions. First we selected five chronic conditions commonly found among elderly individuals: diabetes, hypertension, chronic ischemic heart disease, heart failure, and osteoarthritis. We then calculated the percentage of discharges that had each of the selected conditions listed in one of the fifteen available diagnosis fields. Table 13 shows, for example, that 49 percent of all PACE discharges had a diagnosis for hypertension, with 55 percent for the waiver and 43% for the nursing home groups. One surprising observation is that these particular diagnoses seem to show up less frequently among nursing home discharges even though nursing home discharges are associated with slightly more comorbidities overall.

It is important to note that since we can only measure the presence of these conditions among individuals who were hospitalized, these percentages do not represent the prevalence of these conditions among the evaluation groups. Chart reviews may provide more information on the prevalence of certain conditions among all program participants.

Emergency Department Visits

The final piece of our analysis focused on emergency department (ED) visits. Using FY04 data on ED visits provided to DHCFP, we calculated age-adjusted outpatient ED visit rates per 100 enrollees for each of the three comparison groups. These results are presented in Table 14. In FY04 nursing home residents had 3,781 total outpatient ED visits (i.e., visits where patient was not admitted to the hospital for inpatient stays), or approximately 38 per 100 enrollees. PACE enrollees had 322 total outpatient ED visits or approximately 35 per 100 enrollees, while waiver enrollees had 993 visits or approximately 66 per 100 enrollees. Although the ED visit rate for the PACE group is lower than that of the nursing home group, the difference between the two rates

is not statistically significant (i.e., the confidence intervals for the two rates overlap). The rate for the waiver group, however, is significantly higher.

There could be various explanations for why PACE enrollees have lower rates of outpatient ED visits than the other two groups. It may be that PACE enrollees are less likely to require emergency care. Another possibility is that PACE patients who visit the ED are more likely to be admitted to the hospital than individuals from the other groups (ED patients who are admitted to the hospital are not included in DHCFP's ED database, but rather in our hospital discharge data base). To investigate these possibilities further, we combined data from the ED and hospital discharge databases to calculate total ED visits for each evaluation group (i.e., outpatient visits plus inpatient discharges originating in the ED). Table 15 shows age-adjusted total ED visit rates per 100 enrollees. The age-adjusted rates for the PACE and nursing home groups are practically identical, while the waiver rate is substantially higher. Table 16 calculates percentage of ED visits that resulted in a hospital admission ("admission rates") for each evaluation group. Admission rates were also age-adjusted to account for different age distributions in the three groups. This table shows that PACE enrollees visiting the ED are more commonly admitted to the hospital than ED patients from the other two groups. This might suggest that ED utilization among the PACE group tends to be reserved more for serious cases that warrant hospitalization.

Table 17 shows outpatient ED visits by evaluation group for each preventable condition. Again, there is variation among the most common conditions. Kidney and urinary tract infections represent 25 percent of all outpatient ED visits by nursing home patients. COPD is more common among PACE and waiver enrollees than nursing home residents.

Table 18 shows outpatient ED visits by evaluation group for some of the most frequently observed primary diagnoses among non-preventable conditions. While there was again variation among the three evaluation groups, some diagnoses were commonly seen among all three groups, such as general symptoms, and symptoms involving the respiratory system and other chest symptoms.

Conclusion

In summary, our analysis suggests that while PACE inpatient rates are similar to those of the nursing home group, inpatient days, average length of stay, and outpatient ED visit rates are lower. The PACE group also shows lower rates of inpatient discharges, days, and ED visits than the waiver group. We also found variation in the types of non-preventable conditions and the number and types of comorbidities among the three evaluation groups.

By reviewing the distributions of different diagnoses, clinicians who are familiar with the frail elderly may be able to provide insight into the variations in diagnoses among the three groups. Furthermore, this information may help to identify areas for program improvement. For example, both inpatient and ED visit rates per 100 enrollees for diabetes are higher for the PACE and waiver groups than for the nursing home group. This might suggest that diabetes control is more difficult to achieve in a community-based setting and efforts to improve management of this disease might be warranted.

Finally, while our analysis suggests some encouraging findings for the PACE program, data limitations require that some caution be exercised when interpreting these results. As mentioned, it is not always possible to tell whether certain findings result directly from the programs themselves, or if there are other issues at play. PACE and waiver participants must be “nursing home certifiable” (i.e., they must have one skilled nursing need and two ADLs), however selection issues could still exist if there are differences among the three groups when one looks past that minimum set of criteria (e.g., it could be that individuals who enter nursing homes are more likely to have two skilled nursing needs rather than just one). Alternatively, there could be certain financial structures that influence such factors as total inpatient days. Unfortunately, due to the limited scope of our data, we are unable to analyze all of these issues more fully. Those most familiar with the PACE program may have more insight as to whether such issues are plausible. Elder Affairs staff and PACE medical directors are knowledgeable about program details and policies and can help to add interpretations, confirmations, and caveats to these findings.

Glossary

DHCFP is the central repository for hospital discharge data in Massachusetts.

An age-adjusted rate is a statistically modified crude rate that eliminates the effect of different age distributions in the different groups that may influence hospital admissions.

A preventable condition is an ambulatory-care sensitive condition for which inpatient care might be reduced by timely and effective outpatient care.

A confidence interval is a range of values for a rate constructed so that this range has a specified probability of including the true value of the rate. If the confidence intervals do not overlap, then the rates are considered to be statistically different.

Table 1: Age Distributions for PACE Evaluation Groups										11-Aug-05
UPDATED DRAFT										
	Nursing Home			PACE		Waiver		Total		
	Enrollees	% of Total		Enrollees	% of Total	Enrollees	% of Total	Enrollees	% of Total	
60-64	430	3.4%		81	9.0%	135	8.2%	646	4.2%	
65-69	642	5.0%		90	10.0%	291	17.6%	1023	6.7%	
70-74	1,045	8.2%		117	13.0%	284	17.2%	1,446	9.4%	
75-79	1,733	13.6%		155	17.3%	341	20.7%	2,229	14.6%	
80-84	2,557	20.0%		179	19.9%	298	18.1%	3,034	19.8%	
85+	6,360	49.8%		276	30.7%	300	18.2%	6,936	45.3%	
all ages	12,767	100.0%		898	100.0%	1,649	100.0%	15,314	100.0%	

Table 2: Preventable Hospitalization Conditions		
UPDATED DRAFT		
<u>Group</u>	<u>Group Name</u>	<u>Diagnosis</u>
1	CONGENITAL SYPHILIS	090
2	IMMUNIZATION RELATED AND PREVENTABLE CONDITIONS	033
2	IMMUNIZATION RELATED AND PREVENTABLE CONDITIONS	037
2	IMMUNIZATION RELATED AND PREVENTABLE CONDITIONS	045
2	IMMUNIZATION RELATED AND PREVENTABLE CONDITIONS	320.0
2	IMMUNIZATION RELATED AND PREVENTABLE CONDITIONS	390
2	IMMUNIZATION RELATED AND PREVENTABLE CONDITIONS	391
3	GRAND MAL STATUS AND OTHER EPILEPTIC CONVULSIONS	345
4	CONVULSIONS	780.3
5	SEVERE ENT INFECTIONS	382
5	SEVERE ENT INFECTIONS	462
5	SEVERE ENT INFECTIONS	463
5	SEVERE ENT INFECTIONS	465
5	SEVERE ENT INFECTIONS	472.1
6	PULMONARY TUBERCULOSIS	011
7	OTHER TUBERCULOSIS	012
7	OTHER TUBERCULOSIS	013
7	OTHER TUBERCULOSIS	014
7	OTHER TUBERCULOSIS	015
7	OTHER TUBERCULOSIS	016
7	OTHER TUBERCULOSIS	017
7	OTHER TUBERCULOSIS	018
8	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	491
8	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	492
8	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	494
8	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	496
8	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	466.0
9	BACTERIAL PNEUMONIA	481
9	BACTERIAL PNEUMONIA	482.2
9	BACTERIAL PNEUMONIA	482.3
9	BACTERIAL PNEUMONIA	482.9
9	BACTERIAL PNEUMONIA	483
9	BACTERIAL PNEUMONIA	485
9	BACTERIAL PNEUMONIA	486
10	ASTHMA	493
11	CONGESTIVE HEART FAILURE	428
11	CONGESTIVE HEART FAILURE	402.01
11	CONGESTIVE HEART FAILURE	402.11
11	CONGESTIVE HEART FAILURE	402.91
11	CONGESTIVE HEART FAILURE	518.4
12	HYPERTENSION	401.0
12	HYPERTENSION	401.9
12	HYPERTENSION	402.00

12	HYPERTENSION	402.10
12	HYPERTENSION	402.90
13	ANGINA	411.1
13	ANGINA	411.8
13	ANGINA	413
14	DIABETES	250.1
14	DIABETES	250.2
14	DIABETES	250.3
14	DIABETES	250.8
14	DIABETES	250.9
14	DIABETES	250.0
15	HYPOGLYCEMIA	251.2
16	GASTROENTERITIS	558.9
17	KIDNEY/URINARY INFECTION	590
17	KIDNEY/URINARY INFECTION	599.0
17	KIDNEY/URINARY INFECTION	599.9
18	DEHYDRATION	276.5
19	IRON DEFICIENCY ANEMIA	280.1
19	IRON DEFICIENCY ANEMIA	280.8
19	IRON DEFICIENCY ANEMIA	280.9
20	NUTRITIONAL DEFICIENCIES	260
20	NUTRITIONAL DEFICIENCIES	261
20	NUTRITIONAL DEFICIENCIES	262
20	NUTRITIONAL DEFICIENCIES	268.0
20	NUTRITIONAL DEFICIENCIES	268.1
21	PELVIC INFLAMMATORY DISEASE	614
22	FAILURE TO THRIVE	783.4
23	INVASIVE CERVICAL CANCER	180.0
23	INVASIVE CERVICAL CANCER	180.1
23	INVASIVE CERVICAL CANCER	180.8
24	CELLULITIS	681
24	CELLULITIS	682
24	CELLULITIS	683
24	CELLULITIS	686
Source: Massachusetts Division of Health Care Finance and Policy.		

11-Aug-05

Remarks

Include Secondary diagnosis for newborns only (In code: if DX1 = 090 and ADMTP = 4 , then delete)

Exclude 382 with procedure 20.01

Include 466.0 only with secondary diagnosis (DX2 --> DX9) of 491, 492, 494, 496.

Include 466.0 only with secondary diagnosis (DX2 --> DX9) of 491, 492, 494, 496.

Include 466.0 only with secondary diagnosis (DX2 --> DX9) of 491, 492, 494, 496.

Include 466.0 only with secondary diagnosis (DX2 --> DX9) of 491, 492, 494, 496.

Include 466.0 only with secondary diagnosis (DX2 --> DX9) of 491, 492, 494, 496.

Exclude if it is with secondary diagnosis of 282.6 and patients < 2 months old

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Exclude cases with the following procedures(SG1 - SG15): 36.01, 36.02, 36.05, 37.5, or 37.7

Exclude cases with the following procedures(SG1 - SG15): 36.01, 36.02, 36.05, 37.5, or 37.7

Exclude cases with the following procedures(SG1 - SG15): 36.01, 36.02, 36.05, 37.5, or 37.7

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Exclude cases with the following procedures(SG1 - SG15): 36.01, 36.02, 36.05, 37.5, or 37.7
Exclude cases with procedure 01-86.99
Exclude cases with procedure 01-86.99
Exclude cases with procedure 01-86.99
Age 0-5 only
Age 0-5 only
Age 0-5 only
Exclude cases with surgical procedure 68.3 - 68.8
Age <1 only
Exclude 67.1
Exclude 67.2
Exclude 67.3
Exclude cases with surg. proc(1-86.99), except 86.0 (inc. of skin and subcut. Tiss.) where 86.0 is the only listed surg. proc.
Exclude cases with surg. proc(1-86.99), except 86.0 (inc. of skin and subcut. Tiss.) where 86.0 is the only listed surg. proc.
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Table 3: PACE Evaluation - HDD Analysis: Inpatient Rates per 100 Enrollees										UPDATED DRAFT					11-Aug-05				
		Preventable					Other (Non-preventable)					All							
	Enrollees	Discharges	Rate	Adj. Rate	Lower CI	Upper CI	Discharges	Rate	Adj. Rate	Lower CI	Upper CI	Discharges	Rate	Adj. Rate	Lower CI	Upper CI			
Nursing Home	12,767	1,457	11.4	15.6	14.8	16.4	3,584	28.1	39.3	38.0	40.6	5,041	39.5	54.9	53.4	56.4			
PACE	898	142	15.8	14.5	12.1	16.9	355	39.5	39.8	35.7	43.9	497	55.3	54.3	49.5	59.1			
Waiver	1,649	410	24.9	27.3	24.7	29.9	880	53.4	57.8	54.0	61.6	1,290	78.2	85.1	80.5	89.7			
All	15,314	1,990	13.0	17.5	16.7	18.3	4,785	31.2	42.2	41.0	43.4	6,775	44.2	59.7	58.3	61.1			
60+	1,131,830	76,871	6.8	6.5	6.5	6.5	291,257	25.7	25.1	25.0	25.2	368,128	32.5	31.6	31.5	31.7			
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004.																			
Notes: age-adjustment based on US standard population.																			

Table 4: PACE Evaluation - HDD Analysis: Inpatient Days per 100 Enrollees							UPDATED DRAFT					11-Aug-05				
		Preventable					Other (Non-preventable)					All				
	enrollees	Days	Rate	Adj. Rate	Lower CI	Upper CI	Days	Rate	Adj. Rate	Lower CI	Upper CI	Days	Rate	Adj. Rate	Lower CI	Upper CI
Nursing Home	12,767	6,765	53.0	71.8	70.1	73.5	21,908	171.6	267.2	263.7	270.7	28,673	224.6	339.0	335.1	342.9
PACE	898	554	61.7	65.0	59.6	70.4	1,862	207.3	213.0	203.3	222.7	2,416	269.0	278.0	266.9	289.1
Waiver	1,649	1,864	113.0	125.6	119.9	131.3	4,613	279.7	319.0	309.8	328.2	6,477	392.8	444.6	433.8	455.4
All	15,314	9,183	60.0	81.2	79.5	82.9	28,383	185.3	267.6	264.5	270.7	37,566	245.3	348.9	345.3	352.4
60+	1,131,830	374,775	33.1	31.5	31.4	31.6	1,642,034	145.1	141.1	140.9	141.3	2,016,809	178.2	172.6	172.4	172.8
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004.																
Notes: age-adjustment based on US standard population.																

Table 4a: PACE Evaluation - HDD Analysis: Average Length of Stay (Days per Discharge)										11-Aug-05				
PRELIMINARY DRAFT														
		Preventable				Other (Non-preventable)				All				
		Total Days	Total Discharges	Days per Discharge	Adj. Days per Discharge	Total Days	Total Discharges	Days per Discharge	Adj. Days per Discharge	Total Days	Total Discharges	Days per Discharge	Adj. Days per Discharge	
Nursing Home		6,765	1,457	4.6	4.6	21,908	3,584	6.1	6.7	28,673	5,041	5.7	6.1	
PACE		554	142	3.9	4.7	1,862	355	5.2	5.3	2,416	497	4.9	5.1	
Waiver		1,864	410	4.5	4.6	4,613	880	5.2	5.4	6,477	1,290	5.0	5.2	
All		9,183	1,990	4.6	4.6	28,383	4,785	5.9	6.3	37,566	6,775	5.5	5.8	
60+		374,775	76,871	4.9	4.9	1,642,034	291,257	5.6	5.6	2,016,809	368,128	5.5	5.4	
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004.														
Notes: age-adjustment based on US standard population.														
Average length of stay = Total Days/Total Discharges														

Table 5: PACE Evaluation - HDD Analysis: Preventable Hospitalizations FY 2004						UPDATED DRAFT				11-Aug-05
Distribution of Conditions and Inpatient Rates per 100 Enrollees										
	Nursing Home			PACE			Waiver			
	Enrollment = 12,767			Enrollment = 898			Enrollment = 1,649			
	Discharges	% of Total	Rate	Discharges	% of Total	Rate	Discharges	% of Total	Rate	
Bacterial pneumonia	492	33.8%	3.85	26	18.3%	2.90	55	13.4%	3.34	
CHF	235	16.1%	1.84	42	29.6%	4.68	148	36.1%	8.98	
Kidney/urinary.infection	338	23.2%	2.65	16	11.3%	1.78	39	9.5%	2.37	
COPD	102	7.0%	0.80	15	10.6%	1.67	61	14.9%	3.70	
Dehydration	95	6.5%	0.74	17	12.0%	1.89	27	6.6%	1.64	
Convulsions	58	4.0%	0.45	10	7.0%	1.11	5	1.2%	0.30	
Cellulitis	45	3.1%	0.35	5	3.5%	0.56	21	5.1%	1.27	
Diabetes	35	2.4%	0.27	5	3.5%	0.56	26	6.3%	1.58	
Asthma	13	0.9%	0.10	3	2.1%	0.33	21	5.1%	1.27	
Gastroenteritis	12	0.8%	0.09	0	0.0%	0.00	2	0.5%	0.12	
Hypertension	11	0.8%	0.09	0	0.0%	0.00	1	0.2%	0.06	
Grand mal &epileptic convulsions	10	0.7%	0.08	0	0.0%	0.00	0	0.0%	0.00	
Angina	5	0.3%	0.04	1	0.7%	0.11	3	0.7%	0.18	
Severe ENT infections	2	0.1%	0.02	2	1.4%	0.22	1	0.2%	0.06	
Hypoglycemia	1	0.1%	0.01	0	0.0%	0.00	0	0.0%	0.00	
Immunization-related conditions	1	0.1%	0.01	0	0.0%	0.00	0	0.0%	0.00	
Pelvic inflammatory disease	1	0.1%	0.01	0	0.0%	0.00	0	0.0%	0.00	
Pulmonary tuberculosis	1	0.1%	0.01	0	0.0%	0.00	0	0.0%	0.00	
Total	1,457	100.0%	11.41	142	100.0%	15.81	410	100.0%	24.86	
Source: Massachusetts Division of Health Care Finance and Policy,										
Hospital Discharge Data for FY 2004.										

Table 6: PACE Evaluation - Other Conditions Analysis:					11-Aug-05
Most Common Diagnoses among Discharges for Non-Preventable Hospitalizations by Evaluation Group					
for Common Non-Preventable Hospitalizations - PRELIMINARY DRAFT					
Nursing Home (Enrollment = 12, 767)					
ICD-9-CM	Diagnosis	Discharges	Rate	Days	Rate
507	Pneumonitis due to solids and liquids	328	2.57	2,208	17.29
038	Septicemia	171	1.34	1,134	8.88
820	Fracture of neck of femur	170	1.33	958	7.50
584	Acute renal failure	121	0.95	718	5.62
296	Affective psychoses	118	0.92	1,422	11.14
295	Schizophrenic disorders	116	0.91	1,444	11.31
410	Acute myocardial infarction	115	0.90	649	5.08
290	Senile and presenile organic psychotic conditions	105	0.82	1,093	8.56
578	Gastrointestinal hemorrhage	105	0.82	372	2.91
786	Symptoms involving respiratory system & other chest	101	0.79	260	2.04
PACE (Enrollment = 898)					
ICD-9-CM	Diagnosis	Discharges	Rate	Days	Rate
410	Acute myocardial infarction	25	2.78	136	15.14
780	General symptoms	16	1.78	38	4.23
V57	Care involving use of rehabilitation procedures	15	1.67	165	18.37
820	Fracture of neck of femur	14	1.56	85	9.47
507	Pneumonitis due to solids and liquids	11	1.22	48	5.35
578	Gastrointestinal hemorrhage	10	1.11	44	4.90
786	Symptoms involving respiratory system & other chest	10	1.11	13	1.45
280	Iron deficiency anemias	9	1.00	14	1.56
562	Diverticula of intestine	9	1.00	52	5.79
440	Atherosclerosis	8	0.89	67	7.46
Waiver (Enrollment = 1,649)					
ICD-9-CM	Diagnosis	Discharges	Rate	Days	Rate
786	Symptoms involving respiratory system & other chest	61	3.70	138	8.37
414	Other forms of chronic ischemic heart disease	46	2.79	181	10.98
410	Acute myocardial infarction	36	2.18	204	12.37
427	Cardiac dysrhythmias	33	2.00	135	8.19
780	General symptoms	29	1.76	85	5.15
996	Complications peculiar to certain specified procedures	29	1.76	137	8.31
584	Acute renal failure	22	1.33	125	7.58
V57	Care involving use of rehabilitation procedures	21	1.27	198	12.01
562	Diverticula of intestine	17	1.03	80	4.85
435	Transient cerebral ischemia	15	0.91	53	3.21
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004.					
Rates are discharges or days per 100 enrollees.					
Analysis considered only first three digits of the primary ICD-9-CM diagnosis code.					

Table 7: PACE Evaluation - Other Conditions Analysis: Common Non-Preventable Hospitalizations																11-Aug-05
Distribution of Conditions and Inpatient Rates per 100 Enrollees																
PRELIMINARY DRAFT																
		Nursing Home				PACE				Waiver						
		Enrollment = 12,767				Enrollment = 898				Enrollment = 1,649						
ICD-9-CM	Diagnosis	Discharges	% of Total	Rate		Discharges	% of Total	Rate		Discharges	% of Total	Rate				
786	Symptoms involving respiratory system & other chest symptoms	101	2.82%	0.79		10	2.82%	1.11		61	6.93%	3.70				
414	Other forms of chronic ischemic heart disease	42	1.17%	0.33		7	1.97%	0.78		46	5.23%	2.79				
410	Acute myocardial infarction	115	3.21%	0.90		25	7.04%	2.78		36	4.09%	2.18				
507	Pneumonitis due to solids and liquids	328	9.15%	2.57		11	3.10%	1.22		8	0.91%	0.49				
427	Cardiac dysrhythmias	99	2.76%	0.78		6	1.69%	0.67		33	3.75%	2.00				
780	General symptoms	98	2.73%	0.77		16	4.51%	1.78		29	3.30%	1.76				
996	Complications peculiar to certain specified procedures	82	2.29%	0.64		6	1.69%	0.67		29	3.30%	1.76				
V57	Care involving use of rehabilitation procedures	1	0.03%	0.01		15	4.23%	1.67		21	2.39%	1.27				
820	Fracture of the neck of femur	170	4.74%	1.33		14	3.94%	1.56		13	1.48%	0.79				
038	Septicemia	171	4.77%	1.34		6	1.69%	0.67		9	1.02%	0.55				
584	Acute renal failure	121	3.38%	0.95		7	1.97%	0.78		22	2.50%	1.33				
578	Gastrointestinal hemorrhage	105	2.93%	0.82		10	2.82%	1.11		11	1.25%	0.67				
562	Diverticula of intestine	37	1.03%	0.29		9	2.54%	1.00		17	1.93%	1.03				
280	Iron deficiency anemias	21	0.59%	0.16		9	2.54%	1.00		3	0.34%	0.18				
296	Affective psychoses	118	3.29%	0.92		5	1.41%	0.56		8	0.91%	0.49				
435	Transient cerebral ischemia	24	0.67%	0.19		4	1.13%	0.45		15	1.70%	0.91				
295	Schizophrenic disorders	116	3.24%	0.91		1	0.28%	0.11		5	0.57%	0.30				
440	Atherosclerosis	31	0.86%	0.24		8	2.25%	0.89		13	1.48%	0.79				
564	Functional digestive disorders, not elsewhere classified	11	0.31%	0.09		3	0.85%	0.33		14	1.59%	0.85				
290	Senile and pre-senile organic psychotic conditions	105	2.93%	0.82		3	0.85%	0.33		1	0.11%	0.06				
276	Disorders of fluid, electrolyte, and acid-base balance	40	1.12%	0.31		6	1.69%	0.67		13	1.48%	0.79				
574	Cholelithiasis	38	1.06%	0.30		2	0.56%	0.22		13	1.48%	0.79				
715	Osteoarthritis and allied disorders	6	0.17%	0.05		7	1.97%	0.78		11	1.25%	0.67				
560	Intestinal obstruction without mention of hernia	99	2.76%	0.78		6	1.69%	0.67		9	1.02%	0.55				
008	Intestinal infections due to other organisms	20	0.56%	0.16		6	1.69%	0.67		1	0.11%	0.06				
	Other diagnoses	1,485	41.43%	11.63		153	43.10%	17.04		439	49.89%	26.62				
	Total Non-preventable Discharges	3,584	100.00%	28.07		355	100.00%	39.53		880	100.00%	53.37				
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004.																
Analysis considered only first three digits of the primary ICD-9-CM diagnosis code.																

Table 8: PACE Evaluation - Other Conditions Analysis: Comparison of Inpatient Days per 100 Enrollees for Common Non-Preventable Hospitalizations - PRELIMINARY DRAFT								11-Aug-05
		Nursing Home		PACE		Waiver		
		Enrollment = 12,767		Enrollment = 898		Enrollment = 1,649		
ICD-9-CM	Diagnosis	Total Days	Rate	Total Days	Rate	Total Days	Rate	
786	Symptoms involving respiratory system & other chest symptoms	260	2.04	13	1.45	138	8.37	
414	Other forms of chronic ischemic heart disease	201	1.57	35	3.90	181	10.98	
410	Acute myocardial infarction	649	5.08	136	15.14	204	12.37	
507	Pneumonitis due to solids and liquids	2,208	17.29	48	5.35	40	2.43	
427	Cardiac dysrhythmias	346	2.71	23	2.56	135	8.19	
780	General symptoms	304	2.38	38	4.23	85	5.15	
996	Complications peculiar to certain specified procedures	418	3.27	24	2.67	137	8.31	
V57	Care involving use of rehabilitation procedures	14	0.11	165	18.37	198	12.01	
820	Fracture of the neck of femur	958	7.50	85	9.47	93	5.64	
038	Septicemia	1,134	8.88	62	6.90	77	4.67	
584	Acute renal failure	718	5.62	40	4.45	125	7.58	
578	Gastrointestinal hemorrhage	372	2.91	44	4.90	52	3.15	
562	Diverticula of intestine	223	1.75	52	5.79	80	4.85	
280	Iron deficiency anemias	65	0.51	14	1.56	11	0.67	
296	Affective psychoses	1,422	11.14	55	6.12	127	7.70	
435	Transient cerebral ischemia	68	0.53	7	0.78	53	3.21	
295	Schizophrenic disorders	1,444	11.31	9	1.00	65	3.94	
440	Atherosclerosis	194	1.52	67	7.46	132	8.00	
564	Functional digestive disorders, not elsewhere classified	50	0.39	12	1.34	34	2.06	
290	Senile and pre-senile organic psychotic conditions	1,093	8.56	61	6.79	4	0.24	
276	Disorders of fluid, electrolyte, and acid-base balance	195	1.53	19	2.12	42	2.55	
574	Cholelithiasis	244	1.91	8	0.89	80	4.85	
715	Osteoarthritis and allied disorders	19	0.15	30	3.34	54	3.27	
560	Intestinal obstruction without mention of hernia	588	4.61	36	4.01	80	4.85	
008	Intestinal infections due to other organisms	79	0.62	22	2.45	6	0.36	
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004.								
Rates are days per 100 enrollees.								
Analysis considered only first three digits of the primary ICD-9-CM diagnosis code.								

Hospitalization Category	PACE Program (Average Days)	Non-PACE Program (Average Days)
Heart Failure	7.8	9.2
Chronic Obstructive Pulmonary Disease (COPD)	6.5	8.1
Acute Myocardial Infarction (AMI)	5.2	6.8
Stroke	4.9	6.3
Kidney Disease	3.7	5.1
Surgical Complications	2.5	4.0
Infectious Diseases	2.1	3.5
Mental Health Issues	1.8	3.2
Other Non-Preventable Conditions	1.5	2.9

PRELIMINARY DRAFT

		Nursing Home			PACE			Waiver		
ICD-9-CM	Diagnosis	Total Days	Total Discharges	Average Days per Discharge	Total Days	Total Discharges	Average Days per Discharge	Total Days	Total Discharges	Average Days per Discharge
786	Symptoms involving respiratory system & other chest symptoms	260	101	2.57	13	10	1.30	138	61	2.26
414	Other forms of chronic ischemic heart disease	201	42	4.79	35	7	5.00	181	46	3.93
410	Acute myocardial infarction	649	115	5.64	136	25	5.44	204	36	5.67
507	Pneumonitis due to solids and liquids	2,208	328	6.73	48	11	4.36	40	8	5.00
427	Cardiac dysrhythmias	346	99	3.49	23	6	3.83	135	33	4.09
780	General symptoms	304	98	3.10	38	16	2.38	85	29	2.93
996	Complications peculiar to certain specified procedures	418	82	5.10	24	6	4.00	137	29	4.72
V57	Care involving use of rehabilitation procedures	14	1	14.00	165	15	11.00	198	21	9.43
820	Fracture of the neck of femur	958	170	5.64	85	14	6.07	93	13	7.15
038	Septicemia	1,134	171	6.63	62	6	10.33	77	9	8.56
584	Acute renal failure	718	121	5.93	40	7	5.71	125	22	5.68
578	Gastrointestinal hemorrhage	372	105	3.54	44	10	4.40	52	11	4.73
562	Diverticula of intestine	223	37	6.03	52	9	5.78	80	17	4.71
280	Iron deficiency anemias	65	21	3.10	14	9	1.56	11	3	3.67
296	Affective psychoses	1,422	118	12.05	55	5	11.00	127	8	15.88
435	Transient cerebral ischemia	68	24	2.83	7	4	1.75	53	15	3.53
295	Schizophrenic disorders	1,444	116	12.45	9	1	9.00	65	5	13.00
440	Atherosclerosis	194	31	6.26	67	8	8.38	132	13	10.15
564	Functional digestive disorders, not elsewhere classified	50	11	4.55	12	3	4.00	34	14	2.43
290	Senile and pre-senile organic psychotic conditions	1,093	105	10.41	61	3	20.33	4	1	4.00
276	Disorders of fluid, electrolyte, and acid-base balance	195	40	4.88	19	6	3.17	42	13	3.23
574	Cholelithiasis	244	38	6.42	8	2	4.00	80	13	6.15
715	Osteoarthritis and allied disorders	19	6	3.17	30	7	4.29	54	11	4.91
560	Intestinal obstruction without mention of hernia	588	99	5.94	36	6	6.00	80	9	8.89
008	Intestinal infections due to other organisms	79	20	3.95	22	6	3.67	6	1	6.00
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004.										
Average length of stay = Total Days/Total Discharges										
Analysis considered only first three digits of the primary ICD-9-CM diagnosis code.										

Table 10: PACE Evaluation - Comorbidity Analysis: Average Number of Diagnoses per Discharge					
PRELIMINARY DRAFT					11-Aug-05
	Nursing Home		PACE		Waiver
Preventable Hospitalizations	9.00		8.18		8.53
Other (Non-preventable)	9.12		8.50		8.48
All	9.09		8.41		8.49
Source: Massachusetts Division of Health Care Finance and Policy,					
Hospital Discharge Data for FY 2004					
Averages are not age-adjusted.					

Table 12a: PACE Evaluation - Comorbidity Analysis:					11-Aug-05
Ten Most Common Comorbidities associated with Hospitalizations for Bacterial Pneumonia					
PRELIMINARY DRAFT					
Nursing Home					
	Comorbidity	Occurrences	Discharges	% Discharges with Comorbidity	
401	Essential hypertension	201	492	40.9%	
276	Disorders of fluid, electrolyte, and acid-base balance	199	492	40.4%	
428	Heart failure	192	492	39.0%	
250	Diabetes mellitus	151	492	30.7%	
427	Cardiac dysrhythmias	134	492	27.2%	
294	Other organic psychotic conditions (chronic)	132	492	26.8%	
414	Other forms of chronic ischemic heart disease	132	492	26.8%	
285	Other and unspecified anemias	115	492	23.4%	
599	Other disorders of the urethra and urinary tract	114	492	23.2%	
496	Chronic airway obstruction, not elsewhere classified	106	492	21.5%	
PACE					
	Comorbidity	Occurrences	Discharges	% Discharges with Comorbidity	
250	Diabetes mellitus	14	26	53.8%	
401	Essential hypertension	14	26	53.8%	
427	Cardiac dysrhythmias	9	26	34.6%	
276	Disorders of fluid, electrolyte, and acid-base balance	8	26	30.8%	
272	Disorders of lipid metabolism	7	26	26.9%	
294	Other organic psychotic conditions (chronic)	7	26	26.9%	
428	Heart failure	7	26	26.9%	
599	Other disorders of the urethra and urinary tract	7	26	26.9%	
244	Acquired hypothyroidism	6	26	23.1%	
285	Other and unspecified anemias	6	26	23.1%	
Waiver					
	Comorbidity	Occurrences	Discharges	% Discharges with Comorbidity	
428	Heart failure	28	55	50.9%	
401	Essential hypertension	27	55	49.1%	
414	Other forms of chronic ischemic heart disease	24	55	43.6%	
250	Diabetes mellitus	18	55	32.7%	
491	Chronic bronchitis	18	55	32.7%	
530	Diseases of the esophagus	14	55	25.5%	
276	Disorders of fluid, electrolyte, and acid-base balance	13	55	23.6%	
427	Cardiac dysrhythmias	13	55	23.6%	
V45	Other postprocedural states	13	55	23.6%	
244	Acquired hypothyroidism	11	55	20.0%	
Note: Occurrences represent the hospitalizations for which a comorbidity (defined by the 3-digit ICD-9 code) appears as a secondary diagnoses (dx2 - dx15) associated with this type of preventable hospitalization.					
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004					

Table 12b: PACE Evaluation - Comorbidity Analysis:					11-Aug-05
Ten Most Common Comorbidities associated with Hospitalizations for Congestive Heart Failure					
PRELIMINARY DRAFT					
Nursing Home					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
	414	Other forms of chronic ischemic heart disease	118	235	50.2%
	250	Diabetes mellitus	104	235	44.3%
	401	Essential hypertension	101	235	43.0%
	427	Cardiac dysrhythmias	93	235	39.6%
	V45	Other postprocedural states	64	235	27.2%
	285	Other and unspecified anemias	58	235	24.7%
	496	Chronic airway obstruction, not elsewhere classified	56	235	23.8%
	599	Other disorders of the urethra and urinary tract	55	235	23.4%
	244	Acquired hypothyroidism	44	235	18.7%
	276	Disorders of fluid, electrolyte, and acid-base balance	44	235	18.7%
PACE					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
	250	Diabetes mellitus	26	42	61.9%
	401	Essential hypertension	26	42	61.9%
	414	Other forms of chronic ischemic heart disease	19	42	45.2%
	427	Cardiac dysrhythmias	16	42	38.1%
	530	Diseases of esophagus	12	42	28.6%
	272	Disorders of lipid metabolism	8	42	19.0%
	599	Other disorders of the urethra and urinary tract	8	42	19.0%
	276	Disorders of fluid, electrolyte, and acid-base balance	7	42	16.7%
	715	Osteoarthritis and allied disorders	7	42	16.7%
	428	Heart failure	6	42	14.3%
Waiver					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
	250	Diabetes mellitus	86	148	58.1%
	414	Other forms of chronic ischemic heart disease	84	148	56.8%
	401	Essential hypertension	63	148	42.6%
	V45	Other postprocedural states	60	148	40.5%
	427	Cardiac dysrhythmias	58	148	39.2%
	272	Disorders of lipid metabolism	51	148	34.5%
	428	Heart failure	34	148	23.0%
	424	Other diseases of endocardium	25	148	16.9%
	496	Chronic airway obstruction, not elsewhere classified	25	148	16.9%
	593	Other disorders of kidney and ureter	24	148	16.2%
Note:	Occurrences represent the hospitalizations for which a comorbidity (defined by the 3-digit ICD-9 code) appears as a secondary diagnoses (dx2 - dx15) associated with this type of preventable hospitalization.				
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004					

Table 12c: PACE Evaluation - Comorbidity Analysis:					11-Aug-05
Ten Most Common Comorbidities associated with Hospitalizations for Kidney/Urinary Infections					
PRELIMINARY DRAFT					
Nursing Home					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
	276 Disorders of fluid, electrolyte, and acid-base balance		188	338	55.6%
	041 Bacterial infection in conditions classified elsewhere and of unspecified site		181	338	53.6%
	401 Essential hypertension		152	338	45.0%
	250 Diabetes mellitus		118	338	34.9%
	294 Other organic psychotic conditions (chronic)		115	338	34.0%
	414 Other forms of chronic ischemic heart disease		87	338	25.7%
	780 General symptoms		84	338	24.9%
	285 Other and unspecified anemias		66	338	19.5%
	311 Depressive disorder, not elsewhere classified		63	338	18.6%
	428 Heart failure		60	338	17.8%
PACE					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
	041 Bacterial infection in conditions classified elsewhere and of unspecified site		9	16	56.3%
	276 Disorders of fluid, electrolyte, and acid-base balance		8	16	50.0%
	401 Essential hypertension		8	16	50.0%
	496 Chronic airway obstruction, not elsewhere classified		5	16	31.3%
	715 Osteoarthritis and allied disorders		5	16	31.3%
	272 Disorders of lipid metabolism		4	16	25.0%
	285 Other and unspecified anemias		4	16	25.0%
	294 Other organic psychotic conditions (chronic)		4	16	25.0%
	414 Other forms of chronic ischemic heart disease		4	16	25.0%
	780 General symptoms		4	16	25.0%
Waiver					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
	041 Bacterial infection in conditions classified elsewhere and of unspecified site		21	39	53.8%
	401 Essential hypertension		18	39	46.2%
	250 Diabetes mellitus		16	39	41.0%
	276 Disorders of fluid, electrolyte, and acid-base balance		13	39	33.3%
	428 Heart failure		11	39	28.2%
	414 Other forms of chronic ischemic heart disease		10	39	25.6%
	294 Other organic psychotic conditions (chronic)		9	39	23.1%
	427 Cardiac dysrhythmias		9	39	23.1%
	496 Chronic airway obstruction, not elsewhere classified		8	39	20.5%
	530 Diseases of esophagus		8	39	20.5%
Note: Occurrences represent the hospitalizations for which a comorbidity (defined by the 3-digit ICD-9 code) appears as a secondary diagnoses (dx2 - dx15) associated with this type of preventable hospitalization.					
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004					

Table 12d: PACE Evaluation - Comorbidity Analysis:					11-Aug-05
Ten Most Common Comorbidities associated with Hospitalizations for Chronic Obstructive Pulmonary Disease					
PRELIMINARY DRAFT					
Nursing Home					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
401	Essential hypertension		46	102	45.1%
428	Heart failure		41	102	40.2%
414	Other forms of chronic ischemic heart disease		36	102	35.3%
250	Diabetes mellitus		35	102	34.3%
427	Cardiac dysrhythmias		27	102	26.5%
276	Disorders of fluid, electrolyte, and acid-base balance		24	102	23.5%
311	Depressive disorder, not elsewhere classified		22	102	21.6%
294	Other organic psychotic conditions (chronic)		21	102	20.6%
530	Diseases of esophagus		20	102	19.6%
285	Other and unspecified anemias		17	102	16.7%
PACE					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
414	Other forms of chronic ischemic heart disease		6	15	40.0%
428	Heart failure		6	15	40.0%
296	Affective psychoses		5	15	33.3%
780	General symptoms		5	15	33.3%
250	Diabetes mellitus		4	15	26.7%
300	Neurotic disorders		4	15	26.7%
401	Essential hypertension		4	15	26.7%
412	Old myocardial infarction		4	15	26.7%
530	Diseases of esophagus		4	15	26.7%
276	Disorders of fluid, electrolyte, and acid-base balance		3	15	20.0%
Waiver					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
401	Essential hypertension		35	61	57.4%
250	Diabetes mellitus		31	61	50.8%
414	Other forms of chronic ischemic heart disease		23	61	37.7%
428	Heart failure		17	61	27.9%
530	Diseases of esophagus		14	61	23.0%
278	Obesity and other hyperalimentation		12	61	19.7%
272	Disorders of lipid metabolism		11	61	18.0%
V45	Other postprocedural states		11	61	18.0%
276	Disorders of fluid, electrolyte, and acid-base balance		10	61	16.4%
300	Neurotic disorders		9	61	14.8%
Note:			Occurrences represent the hospitalizations for which a comorbidity (defined by the 3-digit ICD-9 code) appears as a secondary diagnoses (dx2 - dx15) associated with this type of preventable hospitalization.		
Source: Massachusetts Division of Health Care Finance and Policy,					
Hospital Discharge Data for FY 2004					

Table 12c: PACE Evaluation - Comorbidity Analysis:					11-Aug-05
Ten Most Common Comorbidities associated with Hospitalizations for Dehydration					
PRELIMINARY DRAFT					
Nursing Home					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
	401	Essential hypertension	41	95	43.2%
	294	Other organic psychotic conditions (chronic)	33	95	34.7%
	250	Diabetes mellitus	32	95	33.7%
	414	Other forms of chronic ischemic heart disease	25	95	26.3%
	428	Heart failure	24	95	25.3%
	285	Other and unspecified anemias	22	95	23.2%
	244	Acquired hypothyroidism	21	95	22.1%
	331	Other cerebral degenerations	20	95	21.1%
	780	General symptoms	20	95	21.1%
	276	Disorders of fluid, electrolyte, and acid-base balance	19	95	20.0%
PACE					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
	250	Diabetes mellitus	9	17	52.9%
	285	Other and unspecified anemias	7	17	41.2%
	401	Essential hypertension	7	17	41.2%
	780	General symptoms	7	17	41.2%
	414	Other forms of chronic ischemic heart disease	5	17	29.4%
	496	Chronic airway obstruction, not elsewhere classified	5	17	29.4%
	294	Other organic psychotic conditions (chronic)	3	17	17.6%
	427	Cardiac dysrhythmias	3	17	17.6%
	428	Heart failure	3	17	17.6%
	733	Other disorders of bone and cartilage	3	17	17.6%
Waiver					
	Comorbidity		Occurrences	Hospitalizations	% Discharges with Comorbidity
	401	Other forms of chronic ischemic heart disease	14	27	51.9%
	250	Diabetes mellitus	12	27	44.4%
	414	Other forms of chronic ischemic heart disease	12	27	44.4%
	272	Disorders of lipid metabolism	10	27	37.0%
	285	Other and unspecified anemias	7	27	25.9%
	780	General symptoms	7	27	25.9%
	244	Acquired hypothyroidism	6	27	22.2%
	294	Other organic psychotic conditions (chronic)	6	27	22.2%
	783	Symptoms concerning nutrition, metabolism, and development	6	27	22.2%
	V45	Other postprocedural states	6	27	22.2%
Note: Occurrences represent the hospitalizations for which a comorbidity (defined by the 3-digit ICD-9 code) appears as a secondary diagnoses (dx2 - dx15) associated with this type of preventable hospitalization.					
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004					

Table 13: PACE Evaluation - Comorbidity Analysis: Presence of Common Chronic Conditions Among All Discharges												11-Aug-05
PRELIMINARY DRAFT												
			Diabetes		Hypertension		Other Forms of Chronic Ischemic Heart Disease		Heart Failure		Osteoarthritis	
	All Discharges		Number with Diagnosis	Percent with Diagnosis	Number with Diagnosis	Percent with Diagnosis	Number with Diagnosis	Percent with Diagnosis	Number with Diagnosis	Percent with Diagnosis	Number with Diagnosis	Percent with Diagnosis
Nursing Home	5,041		1,656	32.9%	2,182	43.3%	1,496	29.7%	1,582	31.4%	535	10.6%
PACE	497		220	44.3%	244	49.1%	152	30.6%	181	36.4%	77	15.5%
Waiver	1,290		625	48.4%	713	55.3%	516	40.0%	470	36.4%	161	12.5%
Source: Massachusetts Division of Health Care Finance and Policy, Hospital Discharge Data for FY 2004												

Table 14: PACE Evaluation - ED Analysis: Outpatient ED Visit Rates per 100 Enrollees																	11-Aug-05	
PRELIMINARY DRAFT																		
		Preventable						Other						All				
	Enrollees	ED Visits	Rate	Adj. Rate	Lower CI	Upper CI		ED Visits	Rate	Adj. Rate	Lower CI	Upper CI		ED Visits	Rate	Adj. Rate	Lower CI	Upper CI
Nursing Home	12,767	652	5.1	7.6	7.1	8.2		3,129	24.5	30.4	29.3	31.5		3,781	29.6	38.0	36.8	39.2
PACE	898	62	6.9	7.5	5.7	9.4		260	29.0	27.5	24.1	30.8		322	35.9	35.0	31.2	38.8
Waiver	1,649	195	11.8	13.0	11.2	14.8		798	48.4	53.2	49.5	56.9		993	60.2	66.2	62.1	70.3
ALL	15,314	909	5.9	8.6	8.1	9.2		4,187	27.3	34.3	33.2	35.3		5,096	33.3	42.9	41.7	44.0
60+	1,131,830	47,951	4.2	4.2	4.2	4.2		287,933	25.4	25.1	25.0	25.2		335,875	29.7	29.3	29.2	29.4
Source: Massachusetts Division of Health Care Finance and Policy Emergency Department data for FY 2004.																		
Adjusted rates calculated using age distribution of US population.																		
Outpatient ED visits do not include ED visits that resulted in an inpatient stay at the hospital.																		

Table 15: PACE Evaluation - ED Analysis: Total ED Visit Rates per 100 Enrollees								11-Aug-05	
PRELIMINARY DRAFT									
	Enrollees	Outpatient ED Visits	Inpatients Admitted from ED	Total ED Visits	Rate	Adj. Rate	Lower CI	Upper CI	
Nursing Home	12,767	3,781	3,456	7,237	56.7	74.6	72.2	77.0	
PACE	898	322	386	708	78.8	74.4	66.3	82.6	
Waiver	1,649	993	992	1,985	120.4	129.4	121.4	137.5	
Source: Massachusetts Division of Health Care Finance and Policy Emergency Department data for FY 2004.									
Adjusted rates calculated using age distribution of US population.									
Total ED Visits = Outpatient ED Visits + Inpatients Admitted from ED									
Outpatient ED visits do not include ED visits that resulted in an inpatient stay at the hospital.									

Table 16: PACE Evaluation - ED Analysis: Admission Rates from ED per 100 ED Visits							11-Aug-05
PRELIMINARY DRAFT							
	ED Outpatient Visits	Inpatients Admitted from ED	Total ED Visits	Admission Rate	Adjusted Admission Rate	Lower CI	Upper CI
Nursing Home	3,781	3,456	7,237	47.8	49.0	47.8	50.1
PACE	322	386	708	54.5	53.1	49.2	57.1
Waiver	993	992	1,985	50.0	49.0	46.8	51.1
Source: Massachusetts Division of Health Care Finance and Policy Emergency Department data for FY 2004.							
Adjusted rates calculated using age distribution of US population.							
Total ED Visits = Outpatient ED Visits + Inpatients Admitted from ED							
Admission Rate = (Inpatients Admitted from ED/Total ED Visits) x 100							
Outpatient ED visits do not include ED visits that resulted in an inpatient stay at the hospital.							

Table 17: PACE Evaluation - ED Analysis: Outpatient ED Visits by Preventable Hospitalization Condition FY 2004										11-Aug-05	
Distribution of Conditions and Inpatient Rates per 100 Enrollees					PRELIMINARY DRAFT						
	NH				PACE				Waiver		
	Enrollment = 12,767				Enrollment = 898				Enrollment = 1,649		
	ED Visits	% of Total	Rate		ED Visits	% of Total	Rate		ED Visits	% of Total	Rate
Kidney/Urinary Infection	165	25.3%	1.29		11	17.7%	1.22		34	17.4%	2.06
Bacterial Pneumonia	109	16.7%	0.85		4	6.5%	0.45		9	4.6%	0.55
COPD	56	8.6%	0.44		12	19.4%	1.34		32	16.4%	1.94
Cellulitis	67	10.3%	0.52		4	6.5%	0.45		22	11.3%	1.33
Convulsions	74	11.3%	0.58		5	8.1%	0.56		3	1.5%	0.18
Diabetes	30	4.6%	0.23		7	11.3%	0.78		30	15.4%	1.82
Congestive Heart Failure	56	8.6%	0.44		6	9.7%	0.67		9	4.6%	0.55
Dehydration	42	6.4%	0.33		4	6.5%	0.45		12	6.2%	0.73
Severe ENT Infections	14	2.1%	0.11		2	3.2%	0.22		18	9.2%	1.09
Asthma	6	0.9%	0.05		2	3.2%	0.22		16	8.2%	0.97
Hypertension	11	1.7%	0.09		1	1.6%	0.11		4	2.1%	0.24
Angina	4	0.6%	0.03		3	4.8%	0.33		2	1.0%	0.12
Hypoglycemia	6	0.9%	0.05		0	0.0%	0.00		0	0.0%	0.00
Gastroenteritis	8	1.2%	0.06		1	1.6%	0.11		3	1.5%	0.18
Grand Mal & Epileptic Convulsions	4	0.6%	0.03		0	0.0%	0.00		1	0.5%	0.06
Total ED Visits	652	100.0%	5.11		62	100.0%	6.90		195	100.0%	11.83
Source: Massachusetts Division of Health Care Finance and Policy Emergency Department data for FY 2004.											
Outpatient ED visits do not include ED visits that resulted in an inpatient stay at the hospital.											

